

Chapter 1

Purpose and Need

1.1 Introduction

The U.S. Bureau of Reclamation (Reclamation) has developed this Programmatic Environmental Assessment (PEA) in order to implement its anadromous fisheries habitat improvement program within three John Day River subbasins. The intent is to tier additional National Environmental Policy Act (NEPA) analysis, as necessary, off this PEA document. This PEA analyzes the environmental impacts of implementing a 10-year program of improving streamflows and correcting fish passage and screening problems within the North Fork, Middle Fork, and Upper (main stem) subbasins of the John Day River. These subbasins comprise the “project area” for this document.

It is important to note that the subject of this environmental assessment is the implementation of a program for which Reclamation currently has no construction authority. Legislation is pending which will grant Reclamation the authority to conduct the construction portion of the program. This PEA is prepared to disclose the potential impacts of Reclamation’s proposed program when that authority is received. In the interim, Reclamation will proceed with providing technical assistance to further the goals of the program. This technical assistance does not require NEPA compliance.

This PEA is prepared pursuant to the National Environmental Policy Act of 1969. In addition to the action alternative, this PEA also evaluates a no-action alternative as required by NEPA. The proposed action is discussed and analyzed in general terms, as this PEA describes generic types of projects suitable for wide application throughout the project area and, therefore, does not include any site-specific data or analysis. However, this assessment and its analysis of environmental consequences are based on numerous completed projects within the project area.

1.2 Purpose and Need for Action

The National Marine Fisheries Service (NMFS) issued a Biological Opinion (BiOp) in December 2000 on continued operation and configuration of the Federal Columbia River Power System (FCRPS). Unless actions identified in the Reasonable and Prudent Alternative (RPA) in the BiOp are taken, a jeopardy opinion may be issued for continued operation of the FCRPS. As part of the RPA, NMFS identified the need to improve migration, spawning and rearing habitat in priority subbasins as part of an off-site mitigation program. RPA Action 149 requires that Reclamation “shall initiate programs in three priority subbasins (identified in the Basin- wide Recovery Strategy) per year over 5 years, in coordination with NMFS, U.S. Fish and Wildlife Service (USFWS), the states, and others, to address all flow, passage, and screening problems in each subbasin over 10 years.”

The purpose and need for this action is to improve migration, spawning and rearing habitat for listed anadromous fish stocks in the identified priority subbasins by working with willing partners on non-public lands to correct passage, diversion screening and in-stream flow problems caused by water diversion facilities as directed by RPA Action 149. Most diversion facilities are related to irrigated agriculture. Under this action, Reclamation will expand and focus habitat improvement work and will participate in habitat improvement programs in the subbasins. The priority subbasins within the Mid-Columbia River Steelhead Evolutionarily Significant Unit (ESU), established by NMFS, are the Upper John Day, Middle Fork John Day and North Fork John Day (Figure 1).

1.3 Scoping and Issues

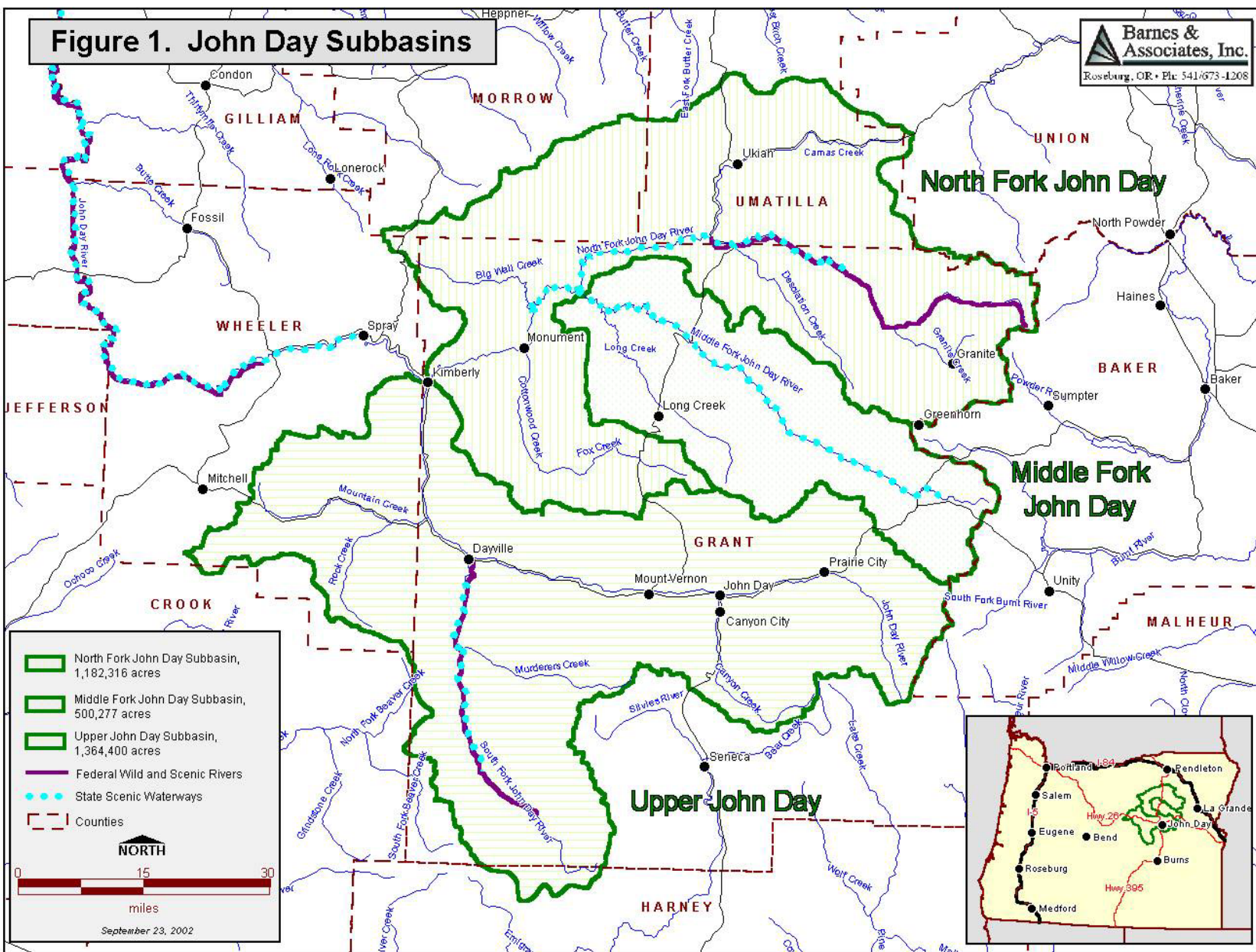
Prior to formal scoping activities, Reclamation's "Advance Team" conducted work in the spring of 2001. This Advance Team was comprised of Reclamation staff with experience in habitat-related and public-outreach actions. The Team visited the area and met with elected officials, irrigators, resource agencies, tribal representatives and other interested citizens in the John Day subbasins. These meetings helped to determine local concerns, identify potential partners and information sources, and quantify and define ongoing local efforts.

Reclamation initiated public scoping for this habitat improvement program within the three John Day subbasins on March 11, 2002. This scoping effort involved a meeting of 26 people, representing 13 organizations, with an interest in habitat improvement activities in one or more of the three subbasins. The scoping period ended on April 12, 2002.

During that month-long period, one written comment was received. Also during this period, Reclamation's Subbasin Liaison made contact with private individuals and others within the subbasins. These contacts, along with their interests and concerns, were documented on Stakeholder Contact Records.

Several issues, both within and outside the scope of this PEA, were identified during the scoping period. Table 1 summarizes these issues. Each issue was identified, then evaluated against two criteria: 1. Is the issue consistent with the purpose and need for Reclamation's proposed action? 2. Is the issue within the management constraints? Management constraints are discussed in Section 2.2.1 of this document. An issue was determined to be within the scope of the analysis if the answer to both questions was "yes."

The scoping process clarified the issues and alternatives to be included in the PEA. All of the issues that are within the scope of the analysis, as defined above, can be dealt with in the action alternative. No new alternatives were developed from these issues that will be analyzed in this PEA.



Note that some issues are analyzed and treated differently between this PEA and the “Scoping Document for Programmatic Environmental Assessment for Implementation of Action 149 of the NMFS 2000 FCRPS BiOp in Three Subbasins of the Mid-Columbia Steelhead ESU in Eastern Oregon”. These differences are the result of changes in the interpretation of management constraints since the finalization of the scoping document.

Table 1. Issues Raised During Scoping Period.

Issue	Consistent with Purpose and Need?	Consistent with Management Constraints?
Pump stations can be beneficial	YES	YES
Infiltration galleries as method of diversion	YES	YES
Lay flat dams to eliminate fish barriers	YES	YES
Lack of fish screens	YES	YES
Improper fish screens	YES	YES
Numerous fish barriers due to push up dams	YES	YES
Problems due to low flows	YES	YES
Purchase water rights	YES	YES
NMFS requires screening for all life stages, even when some life stages are not present *	YES	YES
Channel restoration is needed in some areas	YES	NO
Culverts are barriers to fish	YES	NO
Thermal barriers	YES	NO
Artificial flooding	YES	NO
Water storage in channel – e.g. beaver dams	YES	NO
Water storage off channel	YES	NO
Groundwater & surface water exchange	YES	NO
Juniper thinning	NO	NO
Irrigation return cooling water projects	NO	NO
Construct streamflow gaging stations	NO	NO

* This issue is evaluated against the two criteria in anticipation that eventually all life stages will be present.

1.4 Description of Affected Areas and Location

1.4.1 General

Located in the southern section of the Columbia Plateau Ecological Province, the entire John Day Basin covers nearly 8,100 square miles in north-central and northeastern Oregon. It is the fourth largest basin in the state of Oregon.

The John Day River flows generally northwest from its source in the Strawberry Mountains (9,000 feet elevation) to its mouth at River Mile (RM) 217 (200 feet elevation) on the Columbia River, upstream from the town of Rufus. Major rivers flowing into the mainstem are the North Fork, Middle Fork, and South Fork John Day rivers. The entire John Day system contains over 500 river miles and is one of the largest undammed rivers in the western United States. The John Day River is also the longest free-flowing river with wild salmon and steelhead in the Columbia River Basin.

Topographically, the John Day Basin is an interior plateau generally situated between the Blue Mountains to the east and the Cascade Range to the west. More specifically, the basin is bounded by the Columbia River (Lake Umatilla) to the north, the Blue Mountains to the east, the Aldrich Mountains and Strawberry Range to the south, and the Ochoco Mountains to the west.

The geographic scope of this PEA includes all of the John Day Basin upstream from the confluence of the North Fork John Day and mainstem John Day Rivers at Kimberly (see Figure 1). This basin area includes the North Fork John Day (1,182,316 acres), Middle Fork John Day (500,277 acres) and Upper John Day (1,364,400 acres).

The North Fork John Day, the largest tributary to the main John Day River, originates in the Wallowa-Whitman National Forest in the Blue Mountains at elevations near 8,000 ft. The North Fork John Day River flows westerly for 117 miles and joins the mainstem near Kimberly, 15 miles downstream of the town of Monument. The Middle Fork John Day River originates south of the North Fork in the Malheur National Forest (Blue Mountains), flows westerly for 75 miles, and merges with the North Fork about 18 miles upstream of Monument. The Upper John Day River begins in the Strawberry Mountains in the Malheur National Forest and flows west through the town of John Day (RM 247) and then north from Dayville (RM 212), ending at its confluence with the North Fork John Day River at Kimberly (RM 185). The Upper John Day Subbasin includes the South Fork John Day River, which originates in the southwest portion of Malheur National Forest and flows 60 miles north until it merges with the mainstem near Dayville.

1.4.2 Land Uses

Historically, the John Day Basin was used by Native Americans, fur trappers, and homesteaders. After the treaty of 1855 between the U.S. Government and Indian tribes of the region, homesteads and ranches were established on the river corridor where fertile bottomlands could be farmed and water was available for irrigation and livestock. Gold mining was an important use in the Upper John Day Subbasin in the early part of the century. Small communities were established along the river to provide goods and services for mines, homesteads, and ranches.

Today the economy is heavily based on government, tourism, and agriculture, although some mining continues. The historically large contribution of timber to the basin economy has declined in the last decade due to a number of factors, including lack of

raw materials, environmental litigation (which has contributed to the availability of raw materials), a sagging domestic lumber market, and increased lumber imports. Expansion of the economy is constrained by the current small population, isolation from major cities and limited transportation facilities.

The timber industry is most important in the forested upper portions of the basin. Livestock agriculture is important throughout the basin, and is comprised mostly of cattle and sheep ranching and associated feed crops. Predominant irrigated crops are grass and alfalfa hay.

Mining for gold and other precious metals continues today, both recreationally and commercially. This activity occurs primarily on National Forest lands on the Middle Fork and North Fork John Day Rivers, as well as their tributaries. Most of the mining activity along the North Fork John Day occurs on Granite Creek, located in the upper subbasin. Mining for road construction rock and gravel occurs throughout the basin. However, there are no permitted in-river gravel extraction operations in the John Day Basin (Tim Unterwegner, ODFW, personal communication, July 31, 2002).

Tourism and recreation are growing industries, constituting a significant sector of the basin's economy and are inextricably tied to the production of natural resources. Hunting, fishing, boating, whitewater rafting, camping, wildlife observation, photography, hiking, swimming, and scenic viewing are among the most common recreational activities. Federal Wild and Scenic river segments and State Scenic Waterway designations have undoubtedly contributed to the rise in tourism and recreation. These river segments contain outstandingly remarkable values (ORVs) and provide opportunities for white water rafting, fishing, and wildlife viewing.

Irrigated agriculture comprises nearly two percent of the land in the upper basin, consisting mostly of grass hay, alfalfa, and clover. Irrigated lands are mostly along the upper mainstem from Picture Gorge to the Blue Mountain Hot Springs, in scattered meadow areas of the Middle Fork, and in the lower areas of the North Fork where orchard production and cattle grazing exist (ODFW et al. 1990).

Much of the John Day Basin is within the ceded lands of the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and the Confederated Tribes of the Warm Springs Reservation of Oregon (CTWSRO). Ceded lands were formerly owned by Indians and subsequently ceded to the United States through treaties. Through these treaties, the Tribes have reserved certain rights to the use of this land and its resources. This area is still used for ceremonial and subsistence purposes, including hunting, fishing, and gathering plants.

1.4.3 Land Ownership/Jurisdiction

The three subbasins occupy a significant portion of Grant County, as well as moderate portions of Umatilla and Wheeler Counties (see Figure 1). Subbasin acres by county are shown in Table 2.

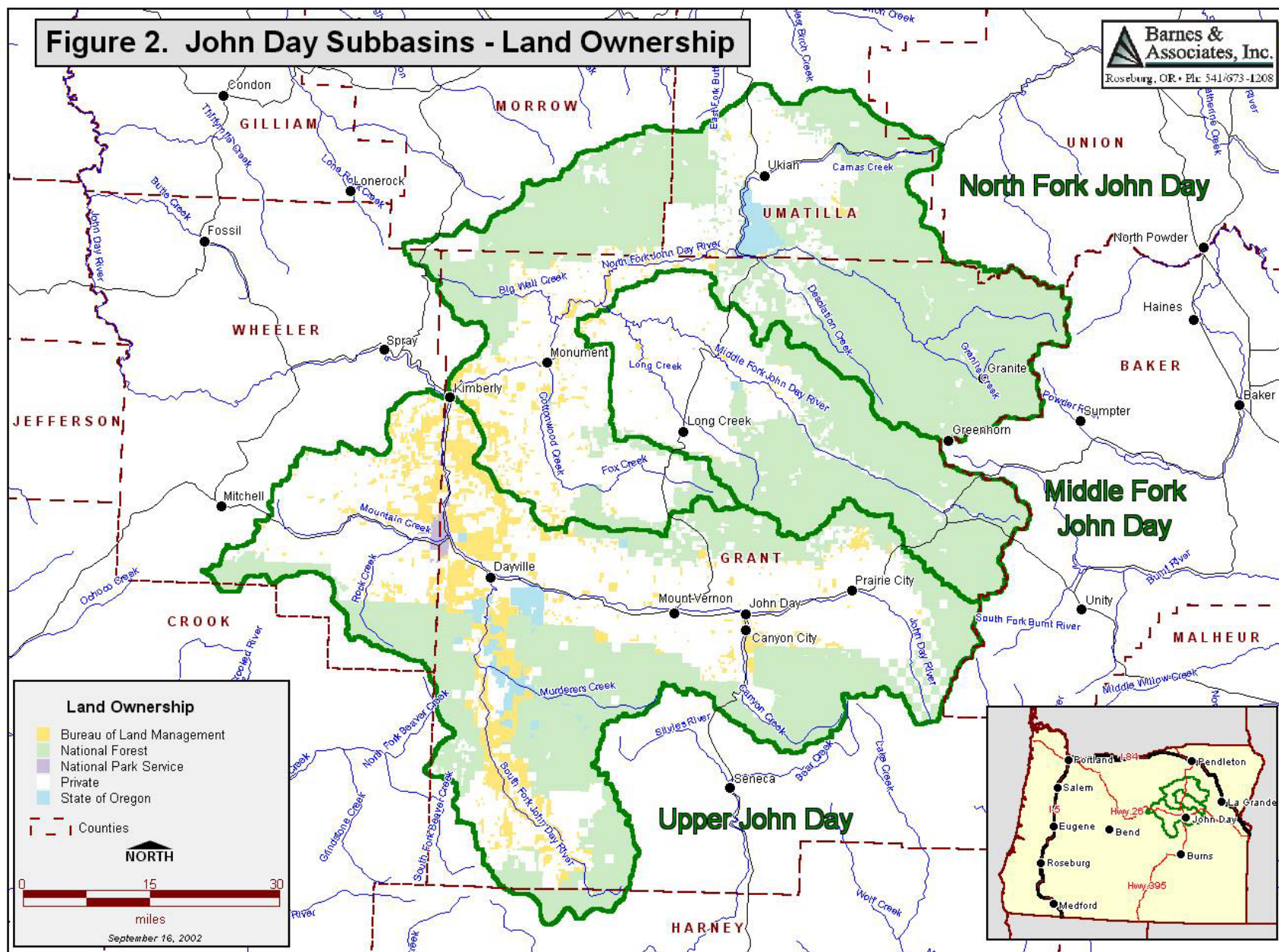
Table 2. Subbasin Acres by County.

County	North Fork John Day	Middle Fork John Day	Upper John Day	Total
Baker	423	609	72	1,104
Crook	0	0	1,992	1,992
Grant	716,387	499,668	1,077,185	2,293,240
Harney	0	0	17,678	17,678
Morrow	141,568	0	0	141,568
Umatilla	311,004	0	0	311,004
Union	7,246	0	0	7,246
Wheeler	5,688	0	267,473	273,161
Total	1,182,316	500,277	1,364,400	3,046,993

The three subbasins are largely dominated by federal ownership in the upper reaches and private ownership in the valley bottoms. Table 3 and Figure 2 display the ownership breakdown within each of the three subbasins.

Table 3. Subbasin Acres by Ownership.

Ownership	North Fork John Day	%	Middle Fork John Day	%	Upper John Day	%	Total	%
Private	432,949	37	212,168	42	650,289	48	1,295,406	43
National Forest	692,198	59	283,707	57	526,621	39	1,502,526	49
Bureau of Land Mgmt	39,269	3	3,865	1	155,629	11	198,763	7
National Park Service	0	0	0	0	6,041	<1	6,041	<1
State of Oregon	17,900	1	537	<1	25,820	2	44,257	1
Total	1,182,316	100%	500,277	100%	1,364,400	100%	3,046,993	100%



1.5 Overview of Problems

Historically, the John Day River was one of the most significant anadromous fish producing rivers in the Columbia River Basin (CRITFC 1995). Currently, the John Day River supports a diverse assemblage of native and non-native fish, including runs of spring and fall chinook salmon, summer steelhead, and Pacific lamprey; and resident populations of westslope cutthroat, interior redband, and bull trout. Recent runs of spring chinook salmon and summer steelhead are smaller than historic runs. In addition, summer steelhead and bull trout are federally-listed as threatened under the Endangered Species Act (ESA). Harvest of anadromous fish is very limited within the John Day Basin, but fish produced here contribute to fisheries in the ocean and the lower Columbia River.

Past and current land uses have degraded the aquatic resource. Water withdrawals have reduced flow in the channel, especially during summer, and contributed to higher water temperature; grazing, mining, timber harvest, and maintenance of pushup dams have reduced riparian vegetation and shade, also contributing to higher water temperature and reducing habitat diversity; pushup dams and reduced flows have created physical and thermal obstacles to fish movement. Yet, the aquatic habitat is healthier than in many other Columbia Basin tributaries due to the absence of large dams and the presence of quality habitat in some federally-owned headwater areas.

As knowledge increases, impacts of these detrimental practices are recognized. This recognition allows for alternatives to be devised and improvements made to agricultural systems to protect fisheries. To date, there have been many habitat restoration accomplishments in the project area. These accomplishments are summarized in section 1.6 below. This PEA focuses on correcting streamflow, fish passage and screening problems.

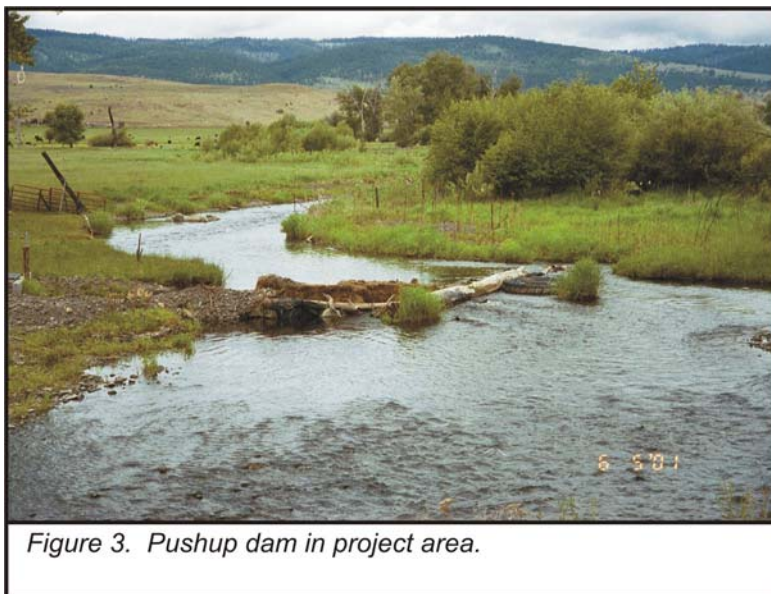


Figure 3. Pushup dam in project area.

Upstream and downstream migration of salmon, steelhead, and trout have been hindered by pushup dams. Pushup dams are two- to 10-foot high structures built of rip-rap, river rock, gravel, sand and dirt, metal, sandbags, and/or other materials and debris, consolidated across the river or stream channel, for the purpose of raising water levels for diversion to downslope land (Figure 3). There is no complete count of pushup dams in the project area, but

local input received during scoping indicates that there may be several hundred.

Pushup dams generally require maintenance one to several times per year depending on the severity of high and low flows after initial construction. The timing of the initial construction of pushup dams is generally late June or early July when flows recede nearer to base flow levels. As water levels continue to recede throughout the remainder of the summer, additional maintenance may be needed to maintain the desired diversion rate. This maintenance involves the in-stream use of heavy equipment and the introduction of fill material to reconstruct dams rendered ineffective by high streamflows in the winter and spring. Such maintenance disturbs channel and bank habitat near the dam site and creates sediment and turbidity that travel downstream. This disturbance reduces riparian cover vegetation and habitat diversity in and around the site of the diversion structure. Consecutive years of channel disturbance also tends to broaden the stream channel and, consequently, reduces water depth.

Downstream-migrating juvenile fish are susceptible to entrapment in water diversions that are either inadequately screened or not screened at all. Fish become impinged on inadequate screens, or are drawn into the diversion system without an escape route back to the main stream. Trapped fish eventually die as they run out of water, or are exposed to other lethal conditions (such as high water temperatures, lack of dissolved oxygen, or physical contact with pumps and sprinklers) in the irrigation channel or agricultural field.

According to the Oregon Department of Fish and Wildlife (ODFW), there are 30 to 50 unscreened diversions in the project area upstream of Kimberly (NPPC 2001; USBR 2002). In addition, there are approximately 150 diversions with screens that do not meet NMFS standards (NPPC, 2001). These out-of-compliance screens typically have openings that are too large to restrict the smaller life stages of fish. As a result, only smolt size and larger fish are kept out of the irrigation channel. The efficiency of the non-compliant screens is roughly 30 to 40 percent overall (Steve Allen, ODFW, Scoping Meeting, March 2002). By contrast, screens meeting current NMFS criteria are considered at least 95 percent efficient at keeping all life stages of fish out of diversions (Steve Allen, ODFW, Scoping Meeting March 2002). Pump stations, where irrigation water is pumped from the river, pose a similar problem. There are approximately 150 pump stations in the three subbasins that are inadequately screened or not screened at all.

Low streamflows are another problem in all three subbasins. Water use for irrigation is heavy, with water appropriations exceeding natural flows at times, most notably in the summer. Water appropriation varies by season; the average proportion of consumptive use to natural flow is two percent in winter, 15 percent in spring, 73 percent in summer and 14 percent in fall (OWRD 2000).

Artificially-low streamflow limits the movement of fish (especially when some reaches are completely dewatered), reduces the amount of aquatic habitat available for fish to live in, and reduces the quality of habitat. Low flows are a contributing factor to water temperatures exceeding Oregon Department of Environmental Quality (ODEQ)

standards for salmonid-bearing streams in much of the basin. See Section 3.1.1.2 for a discussion of ODEQ water quality limited streams within the project area.

1.6 Related Actions and Activities

The past 10 years have seen much fisheries habitat improvement activity in the project area. State and federal agencies, Indian tribes, local water user groups and others have been active with various habitat improvement projects including screen construction, passage barrier removal and streamflow improvement.

Under the Northwest Power Act, the Bonneville Power Administration (BPA) is responsible for mitigating the loss of fish and wildlife habitat caused by the development of the FCRPS. BPA meets this responsibility primarily by funding projects submitted to and recommended by the Northwest Power Planning Council (NPPC). They have also prepared documents to assist with the identification of environmental needs and recommendations for action. Two of the most notable documents are the Environmental Impact Statements titled, *Watershed Management Program, Final Environmental Impact Statement, DOE/EIS-0265*, dated July 1997, and the *Fish & Wildlife Implementation Plan Draft EIS, DOE/EIS-0312*, dated June 2001.

Reclamation has conducted a number of water optimization studies in the John Day Basin. These studies are comprehensive assessments that reviewed most of the ongoing agency watershed restoration programs, rated those programs as to their benefits, and identified gaps in both agency programs and project efforts.

Reclamation also took the lead on a demonstration project referred to as the John Day River Basin Water Conservation Demonstration Project. Upon completion of the project Reclamation prepared a completion report (USBR 2000). In total this demonstration project was comprised of 19 individual projects. These projects addressed a variety of in-stream and stream-related resource issues, including consolidation of irrigation diversions, removal of diversion dams, installation of gravity pipelines, reuse of tailwater, rehabilitation of existing drains, installation of infiltration galleries, and other resource management improvements.

Reclamation participated in plan formulation and oversight and entered into a cooperative agreement with the Grant Soil and Water Conservation District (GSWCD) for planning and design. Local water users, ODFW, Oregon Water Resources Department (OWRD), Grant County, Natural Resources Conservation Service (NRCS), the Tribes, and USFWS were also involved in the planning process. Reclamation entered into an agreement in October of 1996 with the Tribes to fund a tribal staff position in the city of John Day to help coordinate the proposed projects.

The total cost of the John Day Water Conservation Demonstration Project was about \$1,841,200. Reclamation's cost share was approximately 38% of this total. The other cost share partners were landowners, BPA, OWRD, and the Oregon Department of

Agriculture (ODA). In addition, Reclamation provided \$270,000 to the Tribes for project development, coordination, and monitoring (USBR 2000).

The primary source of funding for much of the habitat improvement activity has been the BPA through the NPPC's Rolling Provincial Review Process. The Oregon Watershed Enhancement Board (OWEB), other state and federal agency sources, and private grants have supplemented BPA funding.

The John Day River Basin has a strong local partnership to remove pushup dams. This partnership is between the GSWCD and the CTWSRO. These efforts have been focused primarily on the Upper John Day and Middle Fork John Day subbasins to replace pushup dams with pumping systems, infiltration galleries and permanent diversion structures such as lay-flat stanchions (see Section 2.2.2). The North Fork Watershed Council and the CTUIR have similarly removed passage barriers in the North Fork John Day Subbasin.

In 1971, ODFW identified the John Forrest property in the Upper John Day and Middle Fork John Day subbasins as the highest priority for stream restoration in the entire John Day Basin. The CTWSRO entered into a lease on this property in 2000 with the purpose of undertaking stream restoration projects. This lease was made possible by a grant from Reclamation and supplemental private funds (Robertson 2000). In 2002 the CTWSRO purchased the property with funds provided by the BPA. There have already been numerous restoration projects undertaken on this property, including replacement of three pushup dams with lay-flat stanchion dams (LFSDs), installation of riparian corridor fencing, riparian planting and initiation of biological monitoring (Brent Smith, CTWSRO, personal communication, September 26, 2002).

Much future passage improvement activity is planned as well. The CTUIR and the North Fork Watershed Council both have five-year plans to improve fish passage along the North Fork John Day River. The North Fork Watershed Council plans to work primarily along the lower North Fork, with an emphasis on replacing gravel pushup dams with permanent pumping stations. The CTWSRO also have a five-year plan to eliminate passage barriers, with an emphasis on their recently-purchased Oxbow Ranch property along the Middle Fork John Day River. Reclamation and GSWCD will provide technical assistance and construction implementation, respectively, for much of the future passage improvement work.

Fish screen replacements to meet NMFS standards have been accomplished primarily through the efforts of the fish screen production facility operated by ODFW at John Day. This screen shop, with its staff of approximately 30, produces about 20 NMFS-approved fish screens annually for application in the John Day Basin and throughout eastern Oregon.

Flow augmentation has been tackled through various strategies. The Oregon Wildlife Coalition, Oregon Water Trust and the John Day Bull Trout Recovery Team have acquired, via purchases or donations, in-stream water rights throughout the John Day

River system. CTWSRO, GSWCD, and Reclamation have conducted projects to improve flows by replacing flood irrigation and open irrigation systems with sprinkler, wheel line and closed systems. These projects have been targeted primarily at the Upper John Day and Middle Fork John Day subbasins. The North Fork Watershed Council has done streamflow restoration work in the lower North Fork John Day Subbasin.

Known future flow improvement projects include a plan by the Oregon Water Trust to acquire 2.0 cubic feet per second (cfs) throughout the John Day system over the years 2002 through 2004. The CTUIR have a five-year plan to improve flows in the North Fork John Day Subbasin. The CTWSRO also plan to conduct flow improvement projects over the next five years, much of it targeted at the Oxbow Ranch property.

In addition, Reclamation is conducting an “In-Stream Flow Incremental Methodology” study (IFIM) to identify habitat-flow relationships. This study will determine habitat availability at different flow rates and assist other agencies in making policy decisions regarding target streamflows.

A more detailed listing of past, on-going and future projects can be found in NPPC 2001. Appendix A includes a summary of the projects listed in NPPC 2001 for the project area. The Bureau of Reclamation’s “Tributary Enhancement Water Conservation Demonstration Project” in the John Day River Basin is summarized in Appendix B.

